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7369

## REGION VIII SUMMARY OF DATA QUALITY ASSURANCE REVIEW

Case No. SAS 23564 Project No. \_\_\_\_\_  
Site Richardson Flats  
Contractor Laboratory Hittman Ebasco Assoc.  
Data Reviewer L Roberts Date of Review 9/3/86  
Sample Matrix Cellulose Filters

Sample No. See Laboratory Cover Sheet.


- ( ) Data are acceptable for use  
( ) Data are acceptable for use with qualification noted <sup>below</sup> above  
(☒) Data are preliminary - pending action or verification  
( ) Data are unacceptable

Action required by DPO?

No \_\_\_\_\_ Yes ☒ Following items require action Detection limits

requested by region were not met by the laboratory.  
Lab should resubmit furnace results with RSD values.

Action required by Project Officer (PO)?

No ☒ Yes \_\_\_\_\_

**Following are our findings:**

Cellulose air filters were submitted for analysis of arsenic, cadmium, lead and zinc. This was a SAS request.

The spike recovery for cadmium was 65%. The cadmium results, therefore, have been flagged with an "R". The zinc Laboratory Control Sample recovery was only 60%. The zinc results may be biased low and have been flagged as estimated (J).

Two aspects of the contract were not fulfilled by the laboratory. Detection limits of  $1 \mu\text{g/L}$  were specified by the SAS contract. However, the actual instrument detection limits for As, Cd, Pb and Zn were from  $3.8 - 4.8 \mu\text{g/L}$ . Also, the RSD results for duplicate furnace injections were not reported. The duplicate results appear to agree well, however.

FORM A

Inorganic Data Completeness Checklist

- ✓ Inorganic analysis data sheets
- ✓ Initial calibration and calibration verification results
- ✓ Continuing calibration verification
- ✓ Instrument Detection limits
- ✓ Duplicate results
- ✓ Spike results
- ✓ ICP interference check sample
- ✓ Blank results
- NR Serial Dilution Results
- ✓ Raw data for calibration standards
- ✓ Raw data for blanks
- ✓ Raw data for samples
- ✓ Raw data for duplicates
- ✓ Raw data for spikes
- ✓ Raw data for furnace AA
- NR Percent solids calculation - soils only
- ✓ Traffic Reports

FORM B

Initial calibration data were reviewed. Initial calibration data were included in the package and met all contract requirements.

YES ☒

NO ☐

Comments:

Continuing calibration data were reviewed and these data met all contract requirements.

YES ☒

NO ☐

Comments:

A blank was run with every twenty samples or less per case.

YES ☒

NO ☐

Comments:

*two prep blanks were prepared*

How many elements were detected above the required detection limit? 1

*lead at 7 ug/L*

How many elements were detected at greater than one half the amount detected in any sample? 0

Comments:

FORM C

The interference check sample was run twice per eight hour shift. No massive interferences were present.

YES ☒

NO ☐

Comments:

All matrix spike requirements were met.

YES ☒

NO ☐

Comments:

*Corrections made on form were difficult to read and not initiated. a clean filter was spiked, all recoveries were within 65-120%. Cadmium results are flagged due to a 65% spike recovery.*

A duplicate sample was run with every twenty or fewer samples of a similar matrix, or one per case, whichever is more frequent.

YES ☒

NO ☐

The RPD's were tabulated.

YES ☒

NO ☐

Comments:

All inorganic detection limits met the contract requirements.

YES ☐

NO ☒

Comments:

*SAS request specified 1 ug/L detection limits for the four elements. The lab did not reach these limits.*

FORM D

All Laboratory Control Samples met specified contract limits.

YES \_\_\_\_\_

NO ✓

Comments:

*Time 60% recovery - zinc results estimated.  
LCS performed as required.*

Serial Dilution requirements were met.

YES \_\_\_\_\_

NO \_\_\_\_\_

*Not Required*

The Furnace Atomic Absorption Analysis Scheme was followed correctly.

YES \_\_\_\_\_

NO ✓

*RSD results are not reported. Duplicate injections appear to  
have good agreement. MSA were performed as required.*

All holding times were met.

YES ✓

NO \_\_\_\_\_

Comments:

Form VII A

Q.C. Report No. 53

## INSTRUMENT DETECTION LIMITS AND

## LABORATORY CONTROL SAMPLE

LAB NAME HITMAN EBASCO ASSOCIATES INC.CASE NO. 214 6191 SRS 2356HDATE 8-14-86LCS UNITS (ug/L) mg/kg

(Circle One)

Compound	Required Detection Limits (CRDL)-ug/l	Instrument Detection Limits (IDL)-ug/l		Lab Control Sample		
		ICP/AA	Furnace	True	Found	IR
<b>Metals:</b>						
1. Aluminum	200	56.1				
2. Antimony	60		7.5			
3. Arsenic	80		4.8	20	21	105
4. Barium	200	38.9				
5. Beryllium	5	1.8				
6. Cadmium	5	4.7		20	21	105
7. Calcium	5000	19.4				
8. Chromium	10		1.9			
9. Cobalt	50	10.5				
10. Copper	25	9.0				
11. Iron	100	29.5				
12. Lead	5		0.9	20	22	110
13. Magnesium	5000	4.8				
14. Manganese	15	2.8				
15. Mercury	0.2	0.106 CV				
16. Nickel	40	40.15				
17. Potassium	5000	20.3				
18. Selenium	5		1.1			
19. Silver	10		0.34			
20. Sodium	5000	14.1				
21. Thallium	10		1.7			
22. Tin	40	11.531				
23. Vanadium	50	9.0				
24. Zinc	20	3.8		20	12	60
<b>Others:</b>						
Cyanide	10					

REGION VIII SUMMARY OF DATA QUALITY ASSURANCE REVIEW

Case No. 6218 Project No. \_\_\_\_\_  
Site Richardson Flats  
Contractor Laboratory Hittman Ebasco  
Data Reviewer L Roberts Date of Review 9/5/86  
Sample Matrix Soil - Inorganic

Sample No. MHD861 \_\_\_\_\_  
MHD862 \_\_\_\_\_  
MHD863 \_\_\_\_\_  
MHD864 \_\_\_\_\_  
MHD865 \_\_\_\_\_

- ( ) Data are acceptable for use  
( ☒ ) Data are acceptable for use with qualification noted <sup>below</sup> ~~above~~  
( ) Data are preliminary - pending action or verification  
( ) Data are unacceptable

Action required by DPO?

No ☒ Yes \_\_\_\_\_ Following items require action \_\_\_\_\_

Action required by Project Officer (PO)?

No ☒ Yes \_\_\_\_\_



Following are our findings:

The As, Hg, Sb, Se and Tl results are flagged with an R due to spike recoveries beyond the  $\pm 2.5\%$  control limit. The As Hg and Tl matrix spike recoveries are very high, this may indicate a positive bias. The duplicate RPD results for Cr, Al, Ca, Mg, Hg and Zn were between 39 and 61%. The result should be considered quantitative estimates. The result deletion results for Be, Co, K, Sb and V indicate that an interference may be present for these elements. The laboratory submitted control Form I's because they had originally misidentified the matrix spike recoveries. The new Form I's are difficult to read and confusing.

FORM A

Inorganic Data Completeness Checklist

- ☒ Inorganic analysis data sheets
- ☒ Initial calibration and calibration verification results
- ☒ Continuing calibration verification
- ☒ Instrument Detection limits
- ☒ Duplicate results
- ☒ Spike results
- ☒ ICP interference check sample
- ☒ Blank results
- ☒ Serial Dilution Results
- ☒ Raw data for calibration standards
- ☒ Raw data for blanks
- ☒ Raw data for samples
- ☒ Raw data for duplicates
- ☒ Raw data for spikes
- ☒ Raw data for furnace AA
- ☒ Percent solids calculation - soils only
- ☒ Traffic Reports

FORM B

Initial calibration data were reviewed. Initial calibration data were included in the package and met all contract requirements.

YES ✓

NO \_\_\_\_\_

Comments:

Continuing calibration data were reviewed and these data met all contract requirements.

YES ✓

NO \_\_\_\_\_

Comments:

A blank was run with every twenty samples or less per case.

YES ✓

NO \_\_\_\_\_

Comments:

How many elements were detected above the required detection limit? 0

How many elements were detected at greater than one half the amount detected in any sample? 0

Comments:

FORM C

The interference check sample was run twice per eight hour shift. No massive interferences were present.

YES \_\_\_\_\_

NO ☒

Comments:

*Final ICS for antimony was not analyzed*

All matrix spike requirements were met.

YES \_\_\_\_\_

NO ☒

Comments:

As 280%      Sb 67%  
Hg 150%  
Se 55%  
Cl 218%

*As, Hg & Cl results may be biased high.  
N flag applied to results.*

*Laboratory miscalculated spike recoveries and submitted new forms.*  
A duplicate sample was run with every twenty or fewer samples of a similar matrix, or one per case, whichever is more frequent.

YES ☒

NO \_\_\_\_\_

Cr 61% RPD  
Al 39%  
Ca 56%  
Mg 58%  
Hg 57%  
Zn 42% ↓

*Limit - 35 RPD  
+ flag applied*

The RPD's were tabulated.

YES ☒

NO \_\_\_\_\_

Comments:

All inorganic detection limits met the contract requirements.

YES ☒

NO \_\_\_\_\_

Comments:

FORM D

All Laboratory Control Samples met specified contract limits.

YES ☒

NO ☐

Comments:

Serial Dilution requirements were met.

YES ☐

NO ☒

Results > 110%  
Sb 34% V 68%  
Co 14% Be 12%  
K 15%

E flag applied  
Laboratory did not flag data.

The Furnace Atomic Absorption Analysis Scheme was followed correctly.

YES ☒

NO ☐

All holding times were met.

YES ☒

NO ☐

Comments:

FORM D

All Laboratory Control Samples met specified contract limits.

YES ☒

NO ☐

Comments:

Serial Dilution requirements were met.

YES ☐

NO ☒

Results > 10%

Sb 34% V 68%

Co 14% Be 12%

K 15%

E flag applied

Laboratory did not flag data.

The Furnace Atomic Absorption Analysis Scheme was followed correctly.

YES ☒

NO ☐

All holding times were met.

YES ☒

NO ☐

Comments: